BIT254-2080 ✡

Tribhuvan University
Institute of Science and Technology
2080
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Bachelor Level / Second Year/ Fourth Semester
Bachelors in Information Technology (BIT 254)
(Network and Data Communications)

Full Marks: 60
Pass Marks: 24
Time: 3 hours

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Section A

Long Answer Questions
Attempt any TWO questions. **[2 × 10 = 20]**

1. What are the features of Distance Vector Routing protocol? Explain Distance Vector Routing protocol with relevant example. What are its disadvantages? [2+6+2]

2. Explain the concept of Binary Phase Shift Keying. Represent bit sequence 111000110 by the following waveform [6+4]
   a. NRZ-I
   b. Differential Manchester

3. Explain the design of Selective Repeat ARQ. Illustrate it with suitable flow diagram example. [10]

Section B

Short Answer Questions.
Attempt any EIGHT questions. **[8×5=40]**

4. List different categories of networks and explain any two. [1+4]

5. What is SNMP and how does it work? [2+3]

6. What is MAC-address? The message sequence is 1011011 and generator polynomial $G(X) = x^3 + x^2 + 1$. Calculate the transmitted encoded frame. [2+3]

7. How IGMP allows devices to join a multicast group? Explain. [5]

8. Differentiate between reliable and unreliable protocol. Provide example of each. How can these protocols be used? [3+1+1]

9. Explain different phases of packet switching. How packet switching works? [2+3]

10. Explain Frequency Division Multiplexing with required figure. [5]

11. A pure ALOHA network transmits 200-bit frames using a shared channel with a 200-kbps bandwidth. Find the throughput if the system considering all stations together produces 1000 frames per second. What do you mean by vulnerable time of pure ALOHA? [4+1]

12. Write short notes on [2×2.5=5]
    a. Shannon Capacity
    b. Connectionless service